

BIOLOGICAL EVALUATION OF SOUTHERN PINE BEETLE
ON THE CANEY CREEK WILDERNESS AREA, MENA RANGER DISTRICT,
OUACHITA NATIONAL FOREST

by

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Abstract

A biological evaluation was conducted on 14,443 acres of the Caney Creek Wilderness Area, Mena Ranger District, Ouachita National Forest. In October 1983, there were two active SPB spots. Forest Pest Management recommends that no control action be taken at this time. The spots should be monitored once a month or until no infested SPB trees remain. A detection flight should be conducted early next summer to determine the level of SPB activity.

INTRODUCTION

A biological evaluation was conducted on the Caney Creek Wilderness Area, Mena Ranger District, of the Ouachita National Forest to determine the status of southern pine beetle (Dendroctonus frontalis Zimm.) populations.

District personnel performed an aerial detection flight of the Wilderness Area. An entomologist from Forest Pest Management (FPM), Alexandria, LA, Field Office conducted the on-site evaluation on October 13, 1983.

The Caney Creek Wilderness Area is located on the Mena Ranger District south of Mena, AR. It consists of 14,443 acres of pine-hardwood forest, with shortleaf pine being the predominant pine species. The major recreational use in the area is hiking and backpacking along the Caney Creek Trail.

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METHOD OF EVALUATION AND ANALYSIS OF SPB INFESTATIONS

Three southern pine beetle (SPB) spots were located by Ranger District personnel during an aerial survey. These spots were ground checked by FPM and District personnel. Numbers of infested trees, crown color, basal area, tree diameter, height, age, percentage of the stand in sawtimber, and landform were recorded.

Hazard Rating

The three stands containing SPB infestations were hazard rated using the system developed by Dr. Peter Lorio of the Southern Forest Experiment Station. It is designed for use by the National Forests in Region 8 and utilizes field data collected by the prescriptionist during the field procedure of the compartment prescription process (FSH 2409.21d R-8 Kisatchie National Forest Supplement No. 7).

Potential Spot Growth

The Arkansas model developed by Dr. Fred Stephen at the University of Arkansas was used to predict additional spot growth. This was done for the two active spots that were sampled.

RESULTS AND DISCUSSION

Field data are summarized in table 1.

Ground checks revealed two of the spots were actively infested. The inactive spot contained 6 red vacated trees. Of the two active spots, one contained 9 infested trees and the other 17 infested trees. The ratio of green infested:red infested trees was less than 1:1, indicating that neither spot was very active. Spot 1 rated high hazard and spot 2 rated low hazard for SPB.

Research has shown that small beetle spots tend to go inactive and, therefore, have a low priority for control (Swain and Remion 1981). When analyzed with the Arkansas spot growth model (table 2), both spots showed no additional growth after 40 days.

The resource management objective of this area is to maintain its present wilderness characteristics. FPM feels this can best be accomplished by taking no control action at this time. In addition, the infestations are inaccessible enough that attempting control by salvage, cut-and-leave, or chemicals would require considerable effort and expense and could be disruptive to the forest environment.

SPB activity varies by season of the year. During the warm summer months, the short time required for completion of a generation, and the presence of attractants, causes the beetles to concentrate in, and favors the expansion of, spots. During the fall and winter, spot growth slows down, partly because of cooler temperatures, and partly because of the longer time required for beetle development.

In the fall and spring, many beetles disperse from trees in active spots and infest trees which may be some distance from the original spot. In the fall, initial attacks occur higher on the bole of the tree than during the summer making winter detection difficult. As temperatures warm in late spring and early summer, beetle activity increases and previously undetected spots may appear.

Attack symptoms indicated that beetles were beginning to exhibit characteristics of the winter mode of activity. Since spot growth had slowed down, it was difficult to determine the vigor of SPB populations in the area. Also, there are no reliable population dynamics models which will predict SPB activity next spring based on activity this fall.

Therefore, we recommend that the two spots be checked once a month throughout the winter or until no infested SPB trees remain. Also, a detection flight should be conducted early next summer to determine the level of SPB activity. Communication between the Ranger District, the Supervisor's Office, and FPM should continue in order to evaluate any changes in SPB populations.

Table 1. Summary of ground check data for the Caney Creek Wilderness Area, Mena Ranger District, Ouachita National Forest.

Spot No.	Aerial Est.	Total No. Trees	No. Infested Trees			Estimated Total No. Vacated Trees	% Infested	Green:Red ^{a/} Ratio	Landform	Age	Avg. Ht.	Pine Basal Area	Hazard
			Total	Green	Red								
1	500	319	19	2	17	300	6	0.1:1	Ridge	68	65	130	High
2	100	109	9	2	7	100	8	0.3:1	Sideslope	65	65	70	Low

^{a/} Based on infested trees only.

Table 2. Projected SPB spot growth for SPB spots on the Caney Creek Wilderness Area using the Arkansas SPB Integrated Modeling System.

Spot No.	Days of Prediction ^{a/}	Total No. of Infested Trees		Total No. of Dead Trees	
		Minimum	Maximum	Minimum	Maximum
1	1	19	21	119	121
	8	24	28	120	132
	15	26	32	123	139
	22	26	32	125	143
	29	27	35	127	147
	36 ^{b/}	27	37	127	152
2	1	8	10	309	311
	8	10	12	311	325
	15	10	12	311	331
	22	8	10	311	333
	29	7	10	311	335
	36 ^{b/}	6	10	311	340

^{a/} Day 1 is the day of the evaluation.

^{b/} Model predicted spot would fail to grow after 40 days.

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REPORT NO. 84-2-4
ALEXANDRIA FIELD OFFICE

3430
DECEMBER 1983

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